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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,440	10/16/2001	Michael Greenstein	10004416	5699

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EXAMINER

LAM, ANN Y

ART UNIT PAPER NUMBER

1641

DATE MAILED: 04/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/981,440

Applicant(s)

GREENSTEIN ET AL.

Examiner

Ann Y. Lam

Art Unit

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 21 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Newly submitted claims 21-22 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the invention of claims 21-22 and the invention of claims 1-19 are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product such as heating and monitoring an array of zones that is not used as an analytical device, i.e., not used for analysis.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 21 and 22 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1, line 3, recites "cartridge structure". It is not clear what constitutes the cartridge structure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7 and 10-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Austin et. al., 6,203,683.

Austin et al. disclose an array of temperature-controlled zones (i.e., the zones of the channel surrounding each electrode, see figure 1 and col. 7, lines 23-26) including reactants, and each said temperature-controlled zone is defined by cartridge structure surrounding an area of space in which a reactant is contained;

an array of heat source (i.e., an array of trapping electrodes, column 7, lines 23-26) wherein the array of heat sources is positioned to correspond to the array of temperature-controlled zones so that each heat source is arranged to provide temperature regulation to a corresponding temperature-controlled zone, and wherein one or more of the heat sources emit localized radiation to provide heating in the corresponding temperature-controlled zones (see col. 7, lines 23-26);

a temperature monitor that monitors reactant temperature (col. 11, lines 7-9); and
a modulator that modulates the array of heat sources to regulate temperature in one or more of the corresponding temperature-controlled zones (col. 11, lines 2-4);
whereby each temperature-controlled zone is controllable to a designated temperature (col. 11, lines 3-4).

As to claim 2, the array of heat source comprises electromagnetic radiation emitters (see column 3, lines 22-24, and column 8, lines 5-15).

As to claim 3, the electromagnetic radiation emitters comprise vertical cavity surface emitting laser light sources (see column 8, lines 5-15.)

As to claims 4 and 5, the vertical cavity surface emitting laser light sources transmit infrared light through the reactants (see column 8, lines 5-15, and column 8, lines 35-39.)

As to claim 6, the electromagnetic radiation emitters comprises a light emitting diode, an infrared lamp, an infrared laser or infrared diode laser (see column 8, lines 5-15 and column 8, lines 35-39.)

As to claim 7, the electromagnetic radiation emitters in the array of heat sources generates infrared light of a different wavelength (see column 8, lines 5-15.)

As to claim 10, the array of heat sources comprises internal heat generators (see column 3, lines 11-14 and lines 20-24.)

As to claim 11, the internal heat generators comprise resistive heaters inductive heaters or Peltier heaters (see column 2, lines 44-46, and column 8, lines 6-15.)

As to claim 12, an array of electrical leads correspond with the second array of internal heat generators (see column 3, lines 20-24.)

As to claim 13, the array of heat sources comprises external heaters (see column 3, lines 20-24 and column 8, lines 10-16.)

As to claim 14, a power supply is disclosed (see column 8, lines 4-9.)

As to claim 15, a controller (see column 8, lines 4-9) coupled to said power supply for controlling the drive current is disclosed.

As to claim 16, the controller modulates the power supply based on a temperature measured from the temperature-controlled zones (see column 8, lines 4-9, and column 11, lines 7-21.)

As to claim 17, an array of temperature monitors is positioned to correspond to the array of temperature controlled zones (see column 11, lines 7-21, and column 3, lines 20-24.)

As to claim 18, said reactants comprise assay elements for body fluid analysis (col. 2, lines 40-44.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Austin et. al., 6,203,683.

Austin et al. disclose the invention substantially as claimed, except for the light sources generating infrared light with a wavelength of at least .775 micrometers, or at most 7000 micrometers.

Austin et al. teach that polymerase chain reaction for nucleic acid amplification involves heating and controlling the temperature of the apparatus (see column 1, lines 55-59.) Austin et al. also teach that heating could be achieved by infrared light sources shining directly on the chip (see column 8, lines 13-15), and the embodiments discussed are not considered as limiting the scope of the invention and that modifications and variations of the embodiments are possible without departing from the invention and that equivalents of the invention may be practiced (see column 12, line 62 – column 13, line 5.) Thus, it would have been obvious that the infrared light sources disclosed by Austin et al. (see column 8, lines 13-15) include infrared light sources that are capable of emitting wavelengths as claimed by Applicant, because these infrared

light sources would not depart from the invention in that they are infrared light sources that would provide the necessary heating of the reactants.

Alternatively, since Austin teaches that it is desirable to heat reactants, for purposes such as nucleic acid amplification, it would have been obvious to one of ordinary skill in the art to provide light sources that are capable of generating the infrared light at the claimed wavelengths, as would be necessary for providing adequate heating for the reactants.

Response to Arguments

Applicant's arguments filed January 6, 2005 with respect to the above rejected claims have been fully considered but they are not persuasive.

Applicant argues that amended claim 1 is now distinguished over Austin because claim 1 now specifies cartridge structure that acts to contain the reactants within the zone subject to temperature control, whereas in Austin, the reactants are not constrained by physical cartridge structure surrounding the area where the reactants are contained and the reactants are free to flow in the channel.

However, Examiner asserts that Applicant does not claim this. Amended claim 1 only recites that "temperature-controlled zone is defined by cartridge structure surrounding an area of space in which a reactant is contained". (This limitation is met by the walls of the channel at different portions of the channel, as described above.)

The claims do not require that each zone constrains the reactants from flowing into other zones.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zou et al., 6,762,049, appears to disclose Applicant's invention by disclosing an array of individually controlled heaters and sensors for each chamber to perform reactions simultaneously. Schulte et al. 6,549,690, discloses an array of thermally conductive regions associated with heat resistors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A.L. 


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PRIMARY EXAMINER
GROUP ~~1800~~ 1641
4/26/05